

# Remarks on the genus *Chloritis* in Sulawesi, Indonesia, with the descriptions of two new species (Gastropoda: Pulmonata: Camaenidae)

Wim J.M. Maassen

Maassen, W.J.M. Remarks on the genus *Chloritis* in Sulawesi, Indonesia, with the descriptions of two new species (Gastropoda: Pulmonata: Camaenidae).

Zool. Med. Leiden 83 (11), 9.vi.2009: 595-600, figs 1-2.— ISSN 0024-0672.

W.J.M. Maassen, National Museum of Natural History, P.O. Box 9517, NL 2300 RA Leiden, The Netherlands (maassen@naturalis.nl).

Key words: Mollusca; Gastropoda; Pulmonata; Camaenidae; *Chloritis*; taxonomy; South-east Asia; Indonesia; Sulawesi.

Two new species of the genus *Chloritis* of the camaenid family are described from Sulawesi, Indonesia, viz. *Chloritis vanbruggeni* and *C. togianensis*. Three hitherto unfigured species (*C. biomphala*, *C. balatensis* and *C. talabensis*) are illustrated.

## Introduction

The genus *Chloritis* is restricted to South-east Asia (from China to India and up to New Guinea) with numerous species having usually small distributional ranges. Some researchers divided the genus *Chloritis* in a number of rather poorly defined subgenera, or even consider these subgenera as genera. The characters used for these separations are only shell features; unfortunately from only a few species the anatomy is known. In this paper the more conservative systematic classification (only one genus *Chloritis*) is followed as proposed by Vaught (1989).

The malacofauna of Sulawesi is relatively well known, especially concerning the larger species through the publications by the Swiss cousins P. & F. Sarasin (1899); new records and/or descriptions of new species are summarized in a preliminary checklist of the terrestrial mollusks (Maassen, 1997).

This paper gives an overview of all *Chloritis* species from Sulawesi and illustrates three so far never figured *Chloritis* species: *C. biomphala* (L. Pfeiffer, 1862), *C. balatensis* (Kobelt, 1896) and *C. talabensis* (Kobelt, 1896). Finally, two new species are described, which were recently discovered in material presented to the author for identification.

## Abbreviations

For shell characters: W, width; H, height. For collections: BMNH = The Natural History Museum (formerly British Museum [Natural History]), London, United Kingdom; JA = J. Abbas, Jakarta, Indonesia; JH = J. Hemmen, Wiesbaden, Germany; MBBJ = Museum Zoologicum Bogoriense, Cibinong, Java, Indonesia; MD = W.J.M. Maassen, Dui-vendrecht, The Netherlands (material to be deposited in RMNH); RMNH = Nationaal Natuurhistorisch Museum Naturalis (formerly Rijksmuseum van Natuurlijke Historie), Leiden, The Netherlands; SNSD = Staatliche Naturhistorische Sammlungen Dresden, Museum für Tierkunde, Dresden, Germany.

Fig. 1. Shells of *Chloritis* spec. from Sulawesi. A, Holotype of *Chloritis balatensis* (Kobelt, 1896), SNSD 10199, actual shell diameter 41 mm. B, Holotype of *Chloritis talabensis* (Kobelt, 1896), SNSD 10198, actual shell diameter 24 mm. C, Holotype of *Chloritis togianensis* spec. nov., RMNH 113751, actual shell diameter 18.4 mm. D, Holotype of *Chloritis vanbruggeni* spec. nov., RMNH 113752, actual shell diameter 21.7 mm. ►

### Systematic part

Family Camaenidae Pilsbry, 1895

Genus *Chloritis* Beck, 1837

*Chloritis* Beck, 1837: 26. Type species *Helix unguina* Linnaeus, 1758.

The conchological characters of the species belonging to the genus *Chloritis* are the more or less compact shells, the biconcave or a hardly elevated spire. The first whorls are quite narrow, rounded, the apical ones with regularly arranged granules or hair pits. Last whorl is widened suddenly, with a more or less open umbilicus. Aperture lunate, peristome reflected, connected in most cases by a thin callus.

*Chloritis balatensis* (Kobelt, 1896)

(fig. 1A)

*Helix (Chloritis) balatensis* Kobelt, 1896: 2 (original description, type locality: Balante auf Celebes).

*Chloritis balatensis* (Kobelt); Dharma, 2005: 228, pl. 89, fig. 29 (Peleng Isl.).

Diagnosis.— Shell large for the genus, brown, without hairs, not completely flat, umbilicated, the ends of the peristome connected with a thin callus. Dimensions: W 40–46 mm.

Remarks.— The species was described after only one specimen (“ein tadellos erhaltenes Stück”), holotype by monotypy SNSD 10199.

*Chloritis biomphala* (L. Pfeiffer, 1862)

(fig. 2)

*Helix biomphala* L. Pfeiffer, 1862: 272 (original description, type locality: in insula Ceram).

*Chloritis biomphala* (L. Pfeiffer); P. & F. Sarasin, 1899 : 199, Gorontalo (first record for Sulawesi).

Diagnosis.— Shell of moderate size for the genus, brown, without hairs, completely flat, umbilicated, the ends of the peristome connected with a thin callus. Dimensions: W 17–20 mm.

Remarks.— The species is probably described after more than one specimen (a number is not given in the original description, but in the dimensions 10–11 mm is given for the shell height). The figured specimen (BMNH 198074) therefore represents a syntype. The species is never recorded again.

*Chloritis gruneri* (L. Pfeiffer, 1845)

*Helix gruneri* L. Pfeiffer, 1845: 63 (original description, type locality: unknown).

*Chloritis gruneri* (L. Pfeiffer); Zilch, 1966: 295, pl. 7 fig. 10.

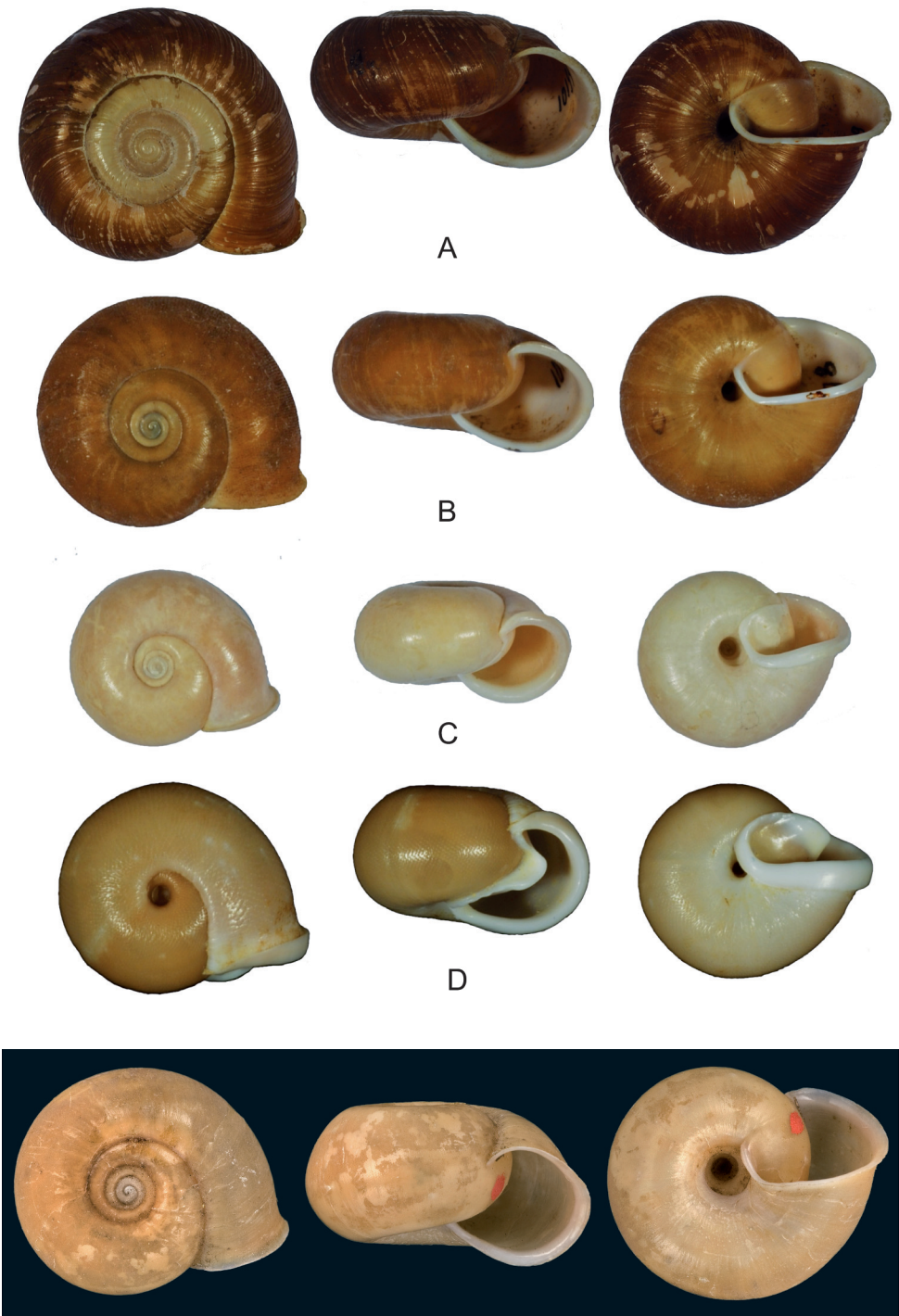


Fig. 2. Syntype of *Chloritis biomphala* (L. Pfeiffer, 1862), BMNH 198074, actual shell diameter 20 mm.

Diagnosis.— Shell large for the genus, brown, without hairs, somewhat elevated spire, umbilicated, the ends of the peristome connected with a strong, white callus bearing a more or less conspicuous tooth. Dimensions: W 34-45 mm.

Remarks.— New record for Sulawesi: Kendari (JA).

*Chloritis macrostoma* Gude, 1906

*Chloritis macrostoma* Gude, 1906: 42, pl. 5 figs 7-7b (original description, type locality: Bangaya, off East Celebes).

Diagnosis.— Shell large for the genus, brown, without hairs, completely flat, umbilicated, the ends of the peristome connected with a thin callus. Dimensions: W 37-48 mm.

Remarks.— Recently specimens were seen at websites, only with Banggai Isl. as locality, wrongly identified as *C. balatensis*!

*Chloritis minahassae* P. & F. Sarasin, 1899

*Chloritis minahassa* P. & F. Sarasin, 1899: 199, pl. 25 figs. 250-250b (original description, type locality: Nord Celebes, Gipfel des Vulkans Sudara; Vulkan Lokon; Bone Gebirge).

Diagnosis.— Shell small for the genus, brown, with hairs, with impressed spire, umbilicated, the ends of the peristome connected with a thin callus. Dimensions: W 11-13 mm.

Remarks.— New records are N-Sulawesi: Tangkoko Nature Reserve, moss forest at Sudara Vulcano (MD); E-Shore Lake Tondok, 12.5 km E of Kotamobagu, 00°43.44'N 124°26.40'E (MD).

*Chloritis planorbina* Haas, 1912

*Chloritis planorbina* Haas, 1912: 415 (original description, type locality: Roembia, SE Celebes).

*Chloritis planorbina* Haas; Zilch, 1966: 295, pl. 7 fig. 9.

Diagnosis.— Shell moderately size for the genus, without hairs, brownish corneous, spire somewhat impressed, umbilicated, the ends of the peristome connected by a thin callus. Dimensions: W 19.5-24 mm.

Remarks.— The species is described after two specimens and has not been recorded again.

*Chloritis talabensis* (Kobelt, 1896)  
(fig. 1B)

*Helix (Chloritis) talabensis* Kobelt, 1896: 2 (original description, type locality: Balante auf Celebes).

Diagnosis.— Shell of moderate size for the genus, brown, with hairs, spire somewhat elevated, umbilicated, the ends of the peristome connected with a thin callus. Dimensions: W 24 mm.

Remarks.— The species was described after only one specimen ("ein schönes Stück"), holotype by monotypy SNSD 10198. The species is since its discovery never recorded again.

*Chloritis togianensis* spec. nov.  
(fig. 1C)

Material examined.— Indonesia, Central Sulawesi, Pulau [Island] Togian, ex coll. J. Hemmen (Wiesbaden) (RMNH 113751/holotype, paratypes JH/2, MD/2, MBBJ/1).

Description.— Shell solid, unicolored light ochre, biconcave, irregularly striated according to some growth lines, with numerous hair pits covering the whole surface. Spire deeply sunken, with  $3\frac{3}{4}$ -4½ whorls. Whorls are rounded, first whorls very narrow, the last one very large, and partly embracing the preceding one, distinctly descending in front. The umbilicus is deep, and about 1/8 of the width of the shell. Aperture is crescent, a little oblique, peristome thick and expanded all around and is somewhat reflexed; both ends connected by a quite thin callus.

Dimensions. H 9.5-11.7 mm; W 17.1-19.9 mm; holotype H 9.8 mm; W 18.4 mm.

Derivatio nominis.— The species is named after the type locality, Togian Island, principle island of the Togian Archipelago, lying in the Tomini Bay.

Remarks.— The species may be compared to only a few species showing the same kind of rotating of the penultimate whorl especially, and possessing simultaneously a sunken shell shape. *Chloritis bifoveata* (Benson, 1856) from West Malaysia is smaller (W 15 mm), and the spire is much deeper; *C. unguiculastra* (Martens, 1867) is somewhat larger (W 22 mm), is smooth without hair or hair pits, and is more regularly coiled; *C. unguilina* (Linnaeus, 1758) is much larger (W 44 mm) is smooth without hair or hair pits, has a groove at the base of the penultimate whorl near the umbilicus and the whorls are more flattened, not rounded.

*Chloritis vanbruggeni* spec. nov.  
(fig. 1D)

Material examined.— Indonesia, Central Sulawesi, Pulau [Island] Peleng, Gunung [Mount] Tatarandang, near village at foot of the mountain in low vegetation, leg. J. Abbas (RMNH 113752/holotype, paratypes: JA, BMNH, MBBJ, MD, SNSD).

Description.— Shell is solid, of a light ochre color, biconcave, regularly striated with very fine axial riblets, with numerous periostracal hairs (visible in this well cleaned sample as hair pits), covering the whole surface. Spire deeply sunken, with  $3\frac{3}{4}$ -4½ whorls. Whorls are rounded, first whorls very narrow, the last one very large, and embracing the preceding one, distinctly descending in front. The umbilicus is deep, and very small (about 1/20 of the width of the shell) and partly hidden by the expanded columellar side of the peristome. Aperture is crescent, a little oblique, peristome very thick and expanded all around and somewhat reflexed. The both ends are connected by a extremely thick callus, forming a very strong and quite sharp arcuate tooth on the body of the penultimate whorl.

Dimensions. H 10.7-14.0 mm; W 18.2-24.6 mm; holotype H 13.0 mm; W 21.7 mm.

Derivatio nominis.— The species is named in honor of Dr A.C. van Bruggen, well-known malacologist, at the occasion of his 80th birthday and in recognition of his work on the malacology of Indonesia.

Remarks.— So far, this most remarkable species can not be confused with any other *Chloritis* species because of his peculiar appearance; so far it is the only species with such a strong and sharp arcuate tooth.

### Acknowledgements

I am very grateful to Dr Fred Naggs (BMNH) for providing the picture of a syntype of *Chloritis biophala*; Dr Katrin Schniebs (SNSD) for the loan of the types of *Chloritis balatensis* and *C. talabensis*; Mr John Abbas for the material of *C. vanbruggeni*; and Mr Jens Hemmen for the material of *C. togianensis*. Dr Bram Breure took care of the pictures and commented on an earlier draft of the manuscript. I also would like to thank an anonymous referee for constructive comments on the manuscript.

### References

- Beck, H., 1837. Index molluscorum praesentis aevi musei principis augustissimi Christiani Frederici: 1-124.— Hafniae.
- Dharma, B., 2005. Recent and fossil Indonesian shells.— Conchbooks, Wiesbaden 1-424, pls 1-150.
- Gude, G.K., 1906. Critical remarks on certain forms of *Chloritis*, with descriptions of twelve new species.— Proceedings of the Malacological Society 7: 40-50, pls 1-2.
- Haas, F., 1912. New land and freshwater shells collected by Dr J. Elbert in the Malay Archipelago.— The Annals and Magazine of Natural History (8) 10: 412-420.
- Kobelt, W., 1896. Schnecken von N.O. Celebes und Banggai.— Abhandlungen und Berichte des Königlichen Zoologischen und Anthropologisch-Ethnographischen Museums zu Dresden 6 (5): 1-4.
- Maassen, W.J.M., 1997. A preliminary checklist of the terrestrial molluscs of Sulawesi, Indonesia. A new start?— De Kreukel 33: 29-102, 3 maps.
- Pfeiffer, L., 1845. Description of twenty-two new species of land-shells, belonging to the collection of Mr H. Cuming.— Proceedings of the Zoological Society of London 1845: 63-69.
- Pfeiffer, L., 1862. Descriptions of thirty-six new land shells, from the collection of H. Cuming, Esq.— Proceedings of the Zoological Society of London 1862: 268-278.
- Sarasin, P. & F., 1899. Materialien zur Naturgeschichte der Insel Celebes. Band 2: Die Landschnecken von Celebes: I-VIII, 1-248, pls 1-31.— Kreidel's Verlag, Wiesbaden.
- Schileyko, A.A., 2003. Treatise on recent terrestrial pulmonate molluscs. Part 11. Trigonochlamyidae, Papillodermidae, Vitrinidae, Limacidae, Bielziidae, Agriolimacidae, Boettgerillidae, Camaenidae.— Ruthenica, Supplement 2: 1467-1626, figs 1896-2098.
- Vaught, K.C., 1989. A classification of the living Mollusca: i-xii, 1-195.— American Malacologists, Inc., Melbourne, Florida, USA.
- Zilch, A., 1966. Die Typen und Typoide des Natur-Museums Senckenberg, 35: Mollusca, Camaenidae (5).— Archiv für Molluskenkunde 95: 293-319, pls 1-5.

Received: 16.iii.2009

Accepted: 4.v.2009

Edited: A.S.H. Breure